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CORRESPONDENCE

Research Correspondence

Barriers to Conversations About Deactivation of Implantable Defibrillators in Seriously Ill Patients

Results of a Nationwide Survey Comparing Cardiology Specialists to Primary Care Physicians

To the Editor: Implantable cardioverter-defibrillators (ICDs) reduce sudden cardiac death. However, ≈25% of patients with ICDs are shocked in the last month of life (1), and these shocks may cause frightening and painful deaths. Little is known about how physicians' attitudes influence their decisions to discuss ICD deactivation with patients.

We created a simple random sample of the American Medical Association Masterfile by choosing 100 physicians from each of 4 strata: electrophysiologists, cardiologists, geriatricians, and internists. Eligible clinicians had to be in active practice and had to have cared for at least 1 patient with an ICD. We mailed letters to all physicians introducing the study, and then followed up by telephone to administer the survey. Physicians who could not be contacted by telephone were mailed surveys, and a series of incentives was used to encourage participation. All surveys were anonymous. This project was exempt from review by the Mount Sinai School of Medicine Institutional Review Board.

We based the survey on our previous qualitative work (2,3). The instrument included Likert scales—from 1 (strongly disagree) to 5 (strongly agree)—to determine physicians' attitudes relating to ICD conversations (Table 1). Data were analyzed as both continuous and dichotomous variables. As the results of these analyses were similar, the Likert scales are reported as strongly agree or agree versus all others. For between-group comparisons, the chi-square test was used; the Fisher exact test was used for smaller cell sizes. The p values reflect comparisons across the 4 groups. There was no difference in response patterns between phone and written surveys. Analysis of variance was used to evaluate the differences in age of respondents across the 4 groups. Significance levels for individual tests were not adjusted as the survey was based on our previous data and the sample size was small, thus making it unlikely that any observed association would be due to chance alone (4). All calculations were performed using SAS version 9.0 (SAS Institute, Cary, North Carolina).

Of the 400 physicians selected for the survey, 11 were deemed ineligible (7 were retired and 4 had never cared for a patient with an ICD) and 52 could not be located. Of the remaining 337 eligible physicians, 147 completed surveys, yielding a response rate among physicians who could be located of 44% (147 of 337). Electrophysiologists had a higher response rate (58%) compared with cardiologists (36%), internists (37%), and geriatricians (41%; $p = 0.013$). Geriatricians tended to be older than cardiologists, electrophysiologists, or internists (mean age 54.1 years vs. 48.3, 49.0, and 48.1 years, respectively; $p < 0.001$). The likelihood of being male was higher among electrophysiologists (92%) and cardiologists (93%) than among geriatricians (62%) and internists (66%; $p < 0.001$).

Clinicians' views about care for seriously ill patients with ICDs varied across specialty. Electrophysiologists were less likely than cardiologists, internists, or geriatricians to agree/strongly agree that they could accurately predict the possibility of a patient being shocked by the ICD near the end of life (12% vs. 41%, 46%, and 30%, respectively; $p = 0.005$). With respect to patient understanding, 94% of electrophysiologists and 93% of cardiologists who responded strongly agreed/agreed with the statement that their patients understood why they had an ICD, whereas only 74% of internists and 77% of geriatricians agreed with this statement ($p = 0.03$). Sixty-three percent of electrophysiologists, 45% of cardiologists, 33% of internists, and 55% of geriatricians believed patients knew they could deactivate their ICD ($p = 0.11$).

One potential barrier to ICD deactivation discussions may relate to physician's beliefs that they can predict which patients will receive a shock. In reality, it can be difficult to predict the terminal cardiac rhythm. Physicians who believe they can predict who will be shocked may fail to discuss deactivation with patients for whom they mistakenly believe ICD firing is unlikely.

Clinicians may be unaware of patients' understanding about their devices. Most clinicians in every group believed their patients understood the indication for their device, which might limit their belief that more discussion is needed. Data from patient focus groups, however, reveal that patients do not know the indication for their device and that their understanding of its purpose varies widely and is often inaccurate (2).

A final barrier may be that many physicians (in our study, 1 of 3 of internists and 2 of 3 of electrophysiologists) believed that patients already knew they could deactivate the shocking function of their ICD. Prior data suggest that patients with ICDs often do not know that this is possible (2). Clinicians who believe that patients know the options for device management at the end of life may be less likely to have deactivation conversations.

This study has limitations. The rate of surveys completed was <50%. Nevertheless, our enrollment rate is consistent with other clinician surveys reporting on patients with advanced illness (5). Electrophysiologists were more likely to respond as compared with others, perhaps because they take more "ownership" of the issue of deactivation because it involves a device they implant.

This study identifies clinician perceptions that may reflect barriers to communication about deactivation of ICDs in patients with advanced illness. The focus of this work is on barriers to conversations, because we believe that these conversations should occur as part of conversations about advance care planning;

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Table 1 Results of 5-Point Likert Scales to Determine Physicians' Attitudes Relating to Care of Patients With ICDs

	Cardiologists	Electrophysiologists	Geriatricians	Internists	p Value
I feel confident in my clinical skills in dealing with patients at the end of life.					
Agree	25 (86)	41 (84)	35 (97)	25 (83)	0.17*
Neutral/disagree	4 (14)	8 (16)	1 (3)	5 (17)	
I feel comfortable with my skills in communicating with patients about treatment options near the end of life.					
Agree	26 (90)	43 (88)	35 (100)	27 (90)	0.14*
Neutral/disagree	3 (10)	6 (12)	0 (0)	3 (10)	
A bad experience with a past conversation about ICD deactivation makes me reluctant to have future conversations about deactivation with patients.					
Agree	2 (8)	0 (0)	1 (7)	0 (0)	0.18*
Neutral/disagree	24 (92)	45 (100)	13 (93)	10 (100)	
I feel confident that I can reasonably estimate a patient's life-expectancy.					
Agree	8 (28)	15 (31)	12 (35)	11 (42)	0.68
Neutral/disagree	21 (72)	33 (69)	22 (65)	15 (58)	
I am confident that I can accurately predict the possibility of a patient being shocked by the ICD near the end of life.					
Agree	12 (41)	6 (12)	9 (30)	11 (46)	0.005
Neutral/disagree	17 (59)	43 (88)	21 (70)	13 (54)	
I believe that my role is to make the decision for a patient in terms of the best medical treatments.					
Agree	11 (38)	16 (33)	18 (50)	16 (53)	0.25
Neutral/disagree	18 (62)	32 (67)	18 (50)	14 (47)	
I believe that my role is to solely inform patients of their treatment options and then let them make the decision on their own.					
Agree	16 (55)	20 (41)	18 (51)	18 (60)	0.37
Neutral/disagree	13 (45)	29 (59)	17 (49)	12 (40)	
I believe that my role is to work with the patient to share decision making about the best treatments.					
Agree	27 (93)	44 (92)	32 (89)	28 (93)	0.93*
Neutral/disagree	2 (7)	4 (8)	4 (11)	2 (7)	
I think that my patients understand why they have an ICD.					
Agree	27 (93)	46 (94)	27 (77)	20 (74)	0.03*
Neutral/disagree	2 (7)	3 (6)	8 (23)	7 (26)	
I think that my patients know that if they so choose, they can deactivate the portions of their ICD that may cause discomfort to them (i.e., cardioversion or defibrillation functions).					
Agree	13 (45)	31 (63)	17 (55)	7 (33)	0.11
Neutral/disagree	16 (55)	18 (37)	14 (45)	14 (67)	
I feel that I have adequate time to be able to discuss treatments with patients.					
Agree	23 (77)	33 (67)	19 (54)	14 (48)	0.09
Neutral/disagree	7 (23)	16 (33)	16 (46)	15 (52)	
Uncertainty about a patient's prognosis prevents me from engaging in conversations about ICD deactivation.					
Agree	10 (33)	12 (24)	4 (13)	6 (24)	0.34*
Neutral/disagree	20 (67)	37 (76)	26 (87)	19 (76)	
I only feel comfortable having conversations about ICD deactivation with patients with whom I have a well-established relationship.					
Agree	11 (38)	22 (46)	14 (44)	6 (29)	0.57
Neutral/disagree	18 (62)	26 (54)	18 (56)	15 (71)	
Positive experiences with past ICD deactivation discussions have encouraged me to have these conversations with my patients.					
Agree	13 (54)	29 (62)	10 (63)	6 (55)	0.90
Neutral/disagree	11 (46)	18 (38)	6 (38)	5 (45)	

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Table 1 Continued

	Cardiologists	Electrophysiologists	Geriatricians	Internists	p Value
If a patient is hospitalized frequently, I am/would be more inclined to discuss deactivation with him/her.					
Agree	11 (37)	20 (42)	16 (52)	9 (39)	0.67
Neutral/disagree	19 (63)	28 (58)	15 (48)	14 (61)	
If a patient has worsening organ function, I am/would be more inclined to discuss deactivation with him/her.					
Agree	25 (83)	39 (81)	26 (84)	16 (70)	0.56
Neutral/disagree	5 (17)	9 (19)	5 (16)	7 (30)	

Values are n (%). Clinicians were asked to rate these statements on a scale of 1 to 5, where 1 was "strongly disagree," 3 was "neither agree nor disagree," and 5 was "strongly agree." For purposes of clarity in reporting these data, the investigators report the Likert scales as strongly agree or agree (noted in Table as "agree") versus all others (noted in Table as "neutral/disagree"). Instruction included that if there was no mention about an implantable cardioverter-defibrillator (ICD) in a particular statement, then the statement was a global question relating to their overall practice. The p values reflect comparisons across the 4 groups of clinicians. All results were obtained using the chi-square test, unless cell sizes were <5. For these, the Fisher exact test was used, and those comparisons are noted by an asterisk (*) next to the p value.

whether the device is deactivated is the decision of the patient and family. Because patients with ICDs are cared for by physicians of a variety of specialties with differing views, future interventions to improve conversations about device deactivation should be targeted to both specialists and generalists, with the appropriate timing of these conversations determined by subsequent empirical studies.

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Key Words: implantable cardioverter-defibrillator ■ palliative care ■ decision making ■ communication ■ health services research.

Letters to the Editor

Strict Glucose Control in the Cardiac Intensive Care Unit

Poised for Real Time?

Strict glucose control has been promoted in many intensive care unit (ICU) settings, including the cardiac ICU, because of the notion that this will "lower the risk of mortality in critically ill patients" (1). However, enthusiasm should be tempered by a realization that the landmark trial showing benefit is wrought with significant flaws and other studies show either no benefit or harm from such a strategy. Ceriello et al. (1) assert that "strong evidence for tight glycemic control as a key strategy for improving prognosis after acute coronary syndromes comes from the study by Van den Berghe et al." (2). However, this study was done on surgical patients, and the greatest decrease in mortality occurred in patients with sepsis. Additionally, concerns have been raised regarding uncharacteristically high mortality rates in the control group and for the concomitant use of a high-dose glucose infusion and parenteral nutrition (3), which is not a standard practice strategy (4). Ceriello et al. (1) also cite beneficial findings of strict glucose control in the medical ICU (5), without noting that comparisons in this trial were made with historical controls, making it difficult